Dayton, MD Mulching Facility Study

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Agenda

- Videos

- Pavement Degradation Concerns
- Current truck volumes
- Impact of trucks on pavement distress
- Lane width and lack of shoulder concerns
- Questions

Videos

- Douglas Township Montgomery County Mulching News Report

http://m.wfmz.com/End-in-sight-for-Mountain-Mulch-controversy/24703050

- Truck Counting Videos

http://sassamansvilletoday.com/Gallery.php

Pavement Degradation Concerns

- Existing vehicle composition from SHA ITMS
- Fourth Power Relationship(1)

$$Load\ Equivalent = \left(\frac{Axis\ Weigh\ lb}{18{,}000\ lb}\right)^4$$

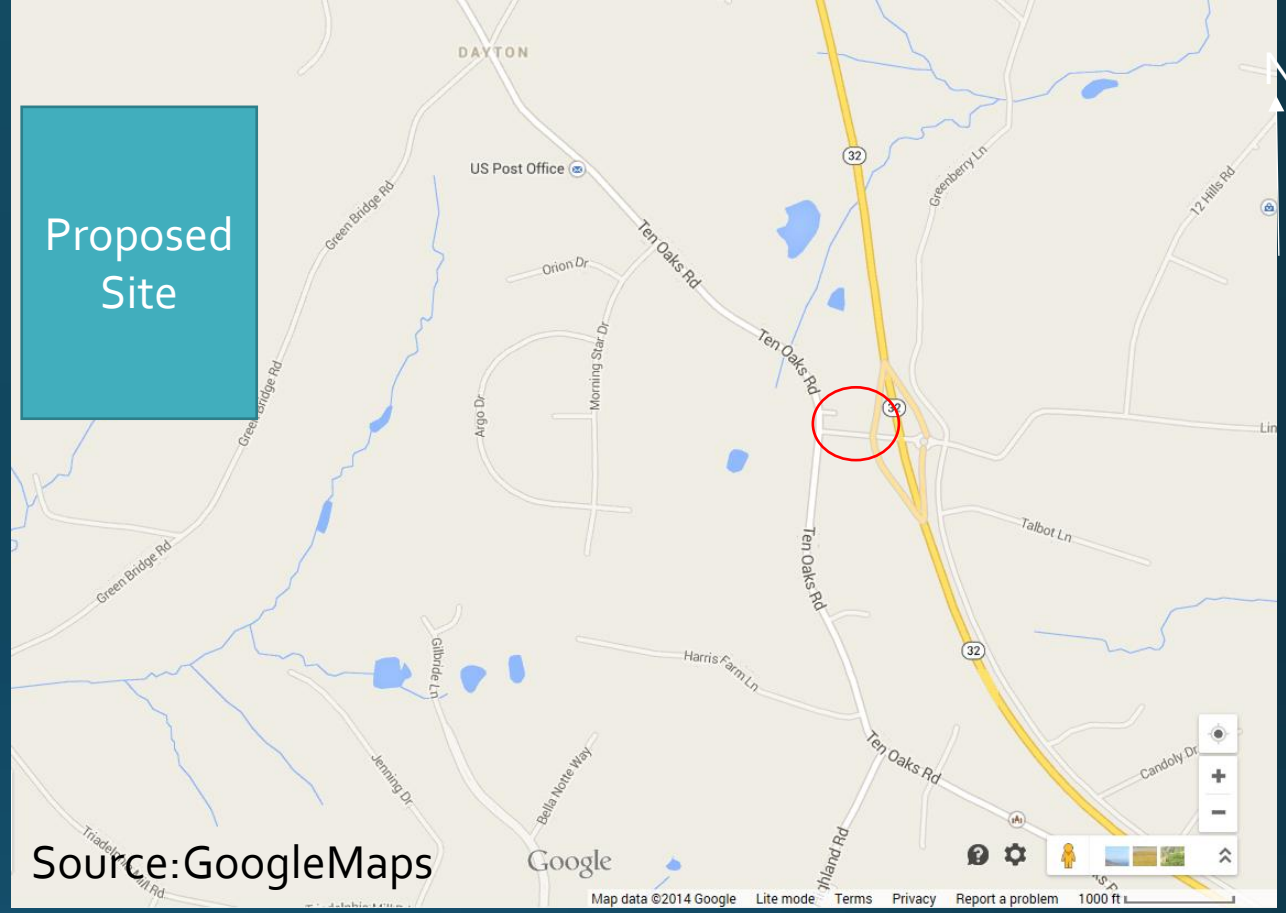
Example: An axel carrying a 36,000 lb load would cause **16 times** the damage of an axel carrying a 18,000 lb load

- If rutting or cracking occurs, safety may become an issue
  - Poor drainage
  - Reduced friction

(1) Equivalent Single Axel Load. Prepared for the Pavement Interactive Core Series. Idaho Department of Transportation. 2010

Current Volume Classification

- W. Linden Church Road, west of MD 32
  - Data from August 2007 from SHA-ITMS
  - Summary of 2 full days of data collection in both directions of travel



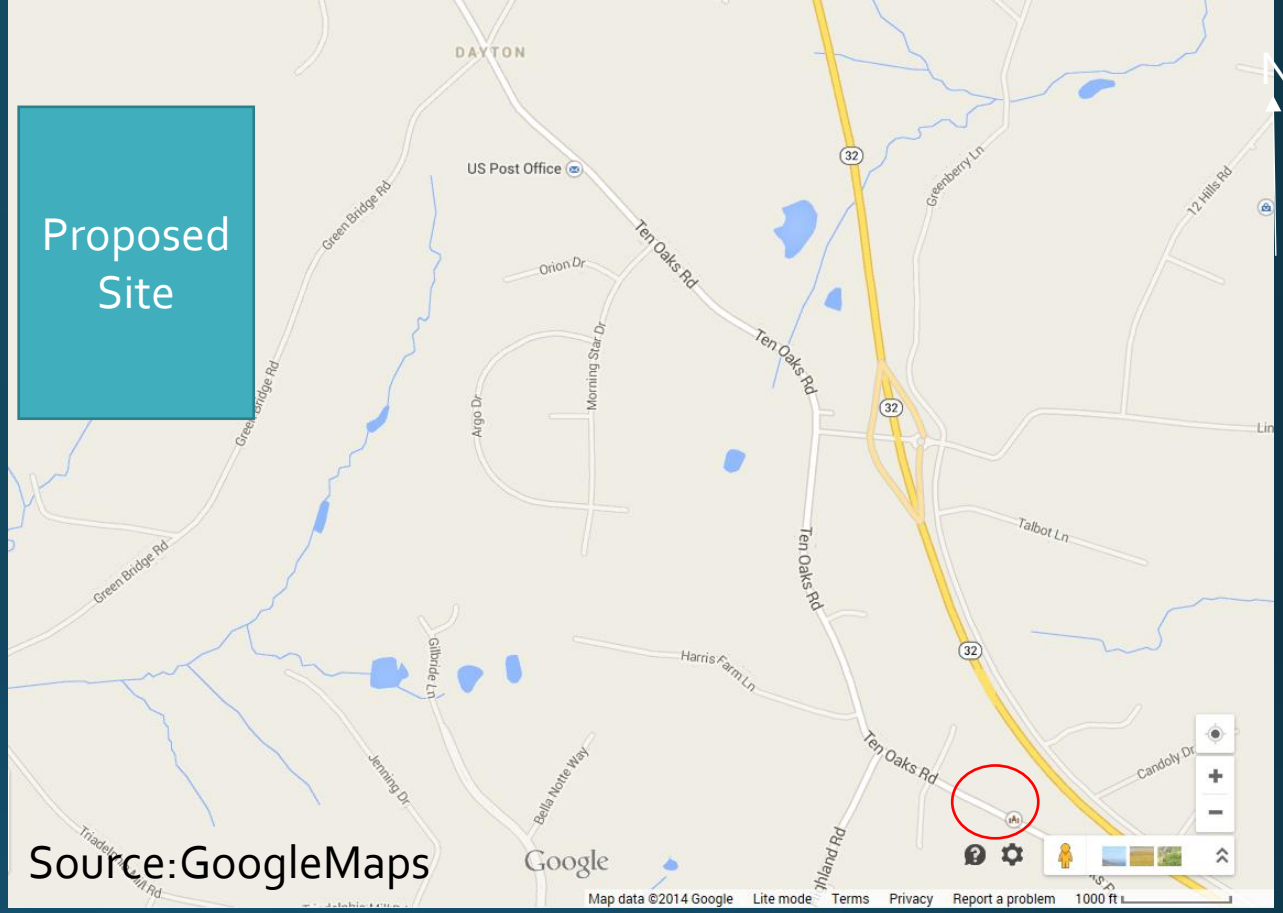
Source:GoogleMaps

*** Summary of Total Report ***				Single-Unit Trucks			Single-Trailer Trucks		Multi-Trailer Trucks			
Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
Motorcycles	Passenger Cars	Light Trucks	Buses	2 Axle 6 Tire	3 Axle	>=4 Axle	<=4 Axle	5 Axle	>=6 Axle	<=5 Axle	6 Axle	>=7 Axle
44	7,941	2,329	15	21	2	1	4	0	0	0	0	0
0.42%	76.67%	22.49%	0.14%	0.20%	0.02%	0.01%	0.04%	0.00%	0.00%	0.00%	0.00%	0.00%

10,314	Percent Class 1-3:	99.58%	Total Class 4:	15	Percent Class 4:	0.14%	Total Class 5-13:	28	Percent Class 5-13:	0.27%		

Current Volume Classification

- Ten Oaks Rd. 0.2 miles north of Triadelphia Rd.
  - Data from August 2011 from SHA-ITMS
  - Summary of 2 full days of data collection in both directions of travel



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167	13,673	3,339	339	1,152	75	11	220	48	8	0	0	0
0.88%	71.84%	17.54%	1.78%	6.05%	0.39%	0.06%	1.16%	0.25%	0.04%	0.00%	0.00%	0.00%

17,179 **Percent Class 1-3:** 90.26% **Total Class 4:** 339 **Percent Class 4:** 1.78% **Total Class 5-13:** 1,514 **Percent Class 5-13:** 7.96%

Impact of Heavy Trucks on Pavement

Study by Salama et al (2006)[2] investigated the effect of trucks on pavements in terms of:

1. Distress Index-measure of pavement cracking damage
2. Rutting
3. Ride Quality Index-measure of roughness

Conclusions: next slide

Salama, H., Chatti, K., and Lyles, R. Effect of Heavy Multiple Axle Trucks on Flexible Pavement Damage Using In-Service Pavement Performance Data. Journal of Transportation Engineering. ASCE. October 2006.

Impact of Heavy Trucks on Pavement

1. Trucks with single and tandem axles appear to affect pavement cracking (DI) more than those with multiple axles (tridem and higher).
2. Conversely, heavier trucks with multiple axles tend to have more effect on rutting than those with single and tandem axles.
3. There was not enough evidence to draw a firm conclusion on whether trucks with different axle configurations affected pavement roughness differently.

These findings are more valuable for truck weight and size policy purposes than pavement design protocols, since trucks with multiple axles represent a small percentage of the total truck traffic compared to trucks with single and tandem axles only.

Lane Width and Lack of Shoulder Concerns

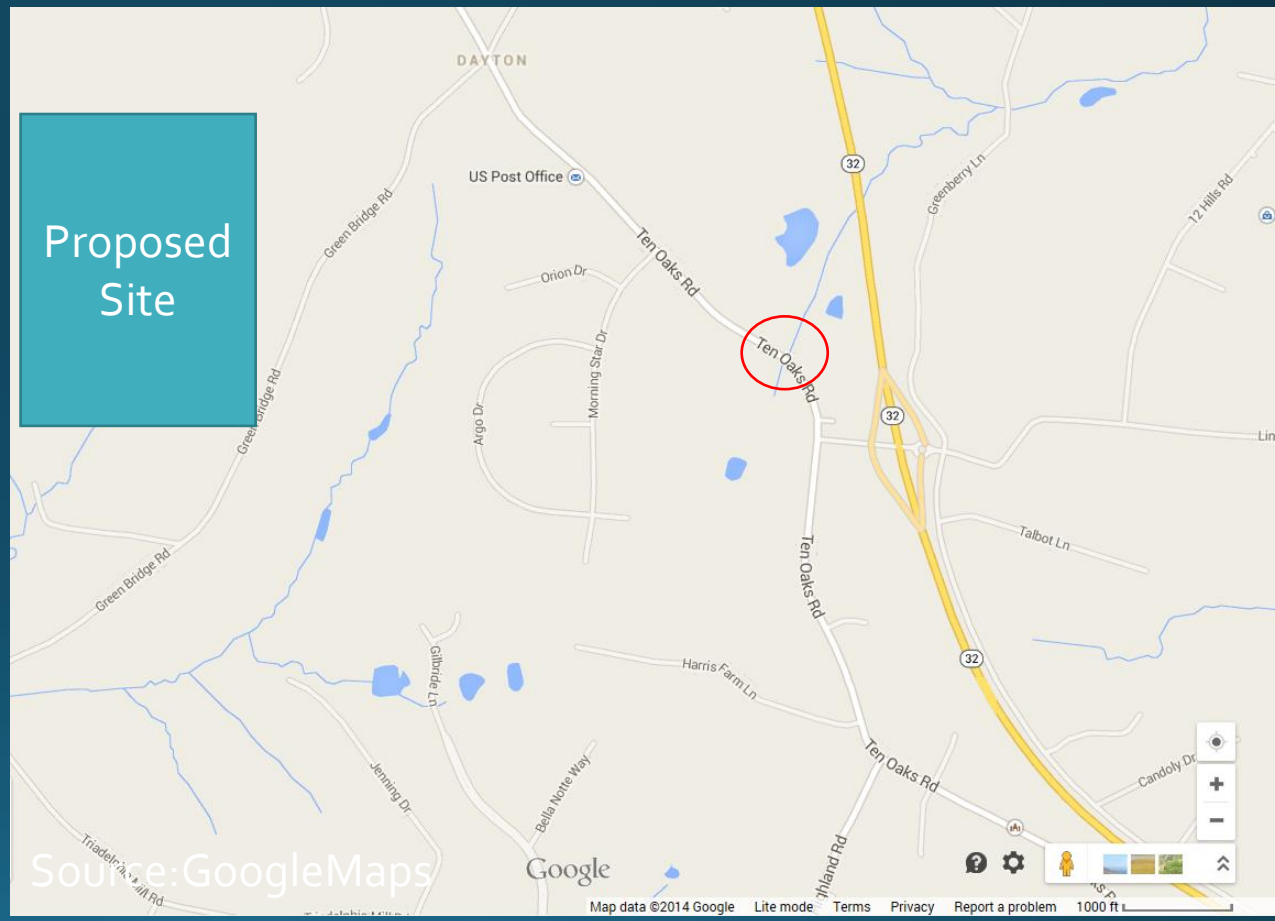
- Many of the existing roads a two-lane, undivided roads with no shoulders
- "Street Furniture" is placed near the edge of road
  - Utility Poles
  - Mailboxes
  - Drainage Culverts…
- Note that this area is used by bicyclists
  - No bike lanes
  - No shoulders
  - Any pavement distress may cause safety issues for cyclists
- There are several school bus stops in the area

A field study is planned to measure lane widths, sight distances, and turning radii

Ten Oaks Road near Morning Star Dr.

Bridge/Culvert on Truck Route

- If/when has the structural integrity has been tested?
- Would the proposed truck loads compromise the structural integrity of the existing bridge structure?



Questions

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